

Kelly (H. A.)

# EXAMINATION OF THE URETERS.

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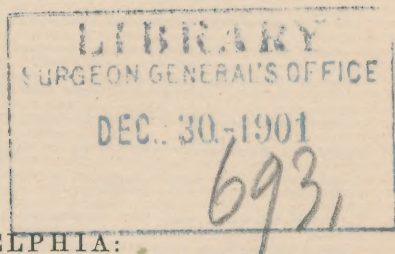
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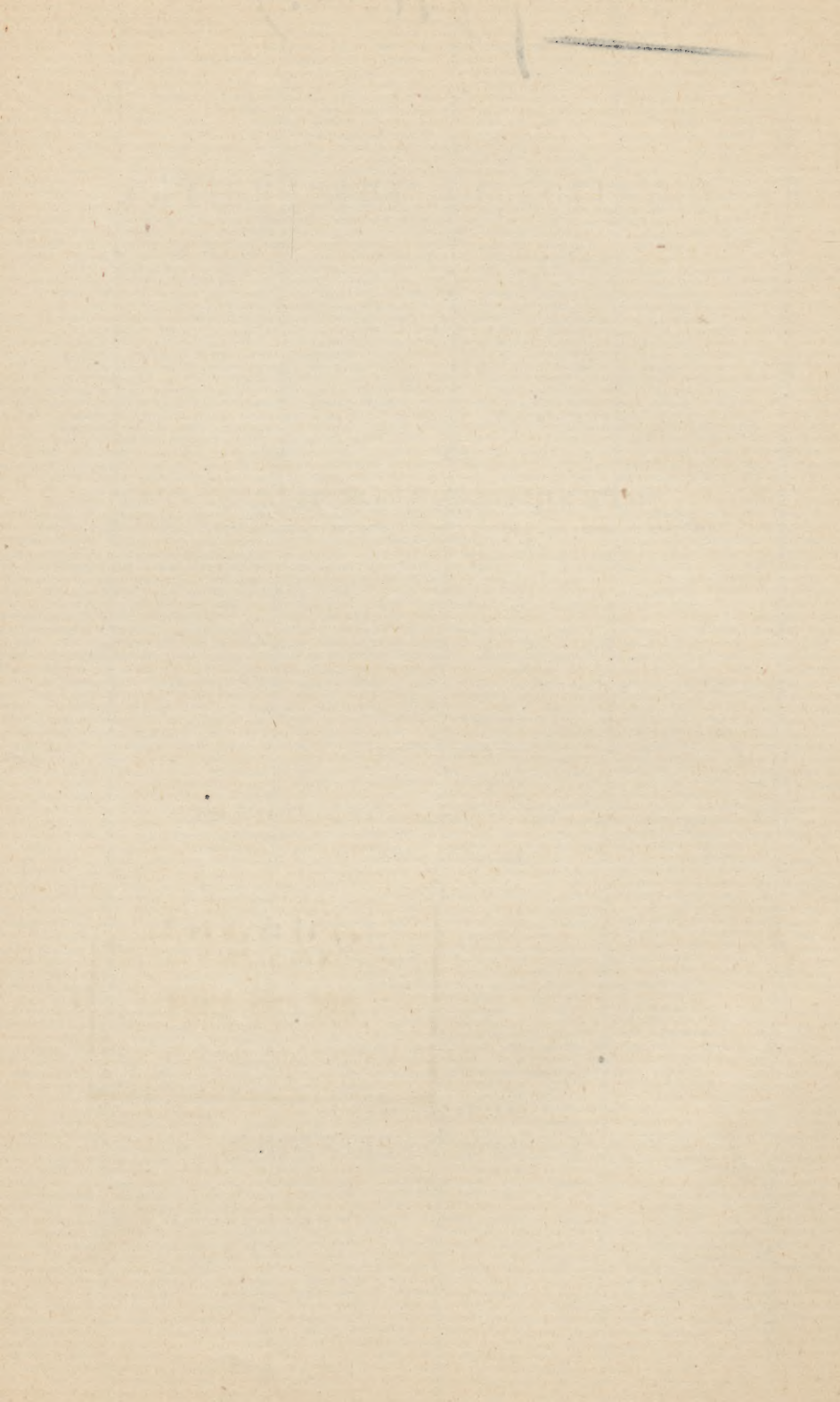
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## PALPATION OF THE URETERS IN THE FEMALE.

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By palpation of the ureters the gynecologist has at his command a new and valuable adjuvant in the correct diagnosis of renal and bladder diseases and their sequelæ, as well as the possibility of recognizing intrinsic diseases of the ureters hitherto only discovered on the post-mortem table. Such is the specialization of specialties, that I have been asked by surgeons if the ureters are prone to disease of any sort or variety. It is but necessary to consult the works of Rayer, Cruveilhier, and others on renal diseases, and especially the plates of the former, to recognize at once the extent to which the ureters are often associated with the kidneys, participating in processes of inflammation, ulceration, and tuberculosis. Here invariably the ureteral disease is secondary, descending, and the condition of the ureters discovered by a vaginal examination may be the first clear point in determining the nature of the disease above, and the only possible means, short of operation, of determining on which side the disease exists. Again, inflammatory diseases of the bladder, particularly gonorrhœal, often have a fatal tendency to travel upward, resulting in pyelitis and pyelo-nephritis. Here the affection of the ureter invariably precedes that of its pelvis and the kidney, and may at once put a careful observer on his guard as to possible consequences, even of an apparently mild inflammation. Calculus resting in the pelvis of the kidney or lodged in the ureter, occasions an inflammatory condition of the whole of the tract below, easily distinguished by palpation.

When we recall the immense quantities of excrement discharged daily through these delicate tubes, from two organs absolutely essential to life, one or other of which may be diseased, or both in different degrees, and associate with this the anatomical relation of the pelvic portion of the ureter in the female, placing it within easy reach of the examining finger, we see at once the importance of a careful routine consideration of their condition and function in every case coming under observation. It is but necessary to bear in mind the cases of hydro-nephrosis which have been caused by pressure of uterine tumors, ovarian tumors, retroflexion, and even prolapsus uteri, and the constriction of parametric scars, caused also in one case by a retroperitoneal sarcoma observed by the writer, and to remember the possible effects of pressure by the gravid uterus, as well as the large number of cases of carcinoma uteri which die of uræmic coma, from involvement and obstruction of the ureters, not to cite cases in which the ureters have been tied in enucleating the cancerous uterus per vaginam, as communicated to me by Dr. H. C. Coe, and observed by others, as well as cases in which a ureter has been cut in opening a pelvic abscess, to realize the clinical importance of ureteral pathology. I may also here mention the fatal results which have followed the neglect of Dr. Emmet's precaution, in the operation of vesico-vaginal fistule, of rolling out the edges and hunting for the ureteral orifices, a neglect which has in many instances resulted in death and in more in a failure in the operation. This brief statement of the important facts serves to show how extended a field is here open for the gynecologist, connecting him often with practical medicine, just as the abdominal surgery of to-day closely links his work with that of the general surgeon. In fact, with a more careful study of bladder troubles, now the *bête noir* of gynecology, with a differentiation of bladder and ureteral diseases up to this time impossible, and with an association of a careful study of renal diseases as connected with or to be disassociated from the last, a new realm seems to be opening to the scientific gynecologist.

METHODS OF EXAMINATION.—The ureters can be examined in several ways :

By inspection.

By catheterization.

By palpation, or by either or all three methods combined.

Inspection is the method proposed by Dr. T. Emmet, and is conducted by splitting the vesico-vaginal septum and everting the edges of the wound until the ureteral orifices are exposed, when the ureters may also be catheterized, and their secretions compared. This method resembles the practice of introducing a catheter into the exposed orifices of the ureters in the margin of a vesico-vaginal fistule. It is one of value in serious cases warranting operative interference; nor is the operation, skilfully conducted, to be estimated as in any way grave. The edges of the incisions can be brought together after the examination and the wound healed at once. Grünfeld attempted to reach the same result by means of a catheter attached to an endoscope, introduced per urethram and carried thus into the ureter under control of the eye, while G. Simon gave great impulse to the whole subject of catheterization by his well-known paper, "Ueber die Sondirung des Harnleiters beim Weibe." His method, in brief, was to cut the tight external orifice of the urethra, to dilate the canal by a series of plugs, slowly and carefully introduced, until it would admit the index finger (his finger measured almost six centimetres in circumference), which sought out the little ureteral prominence in the bladder, and thus guided a catheter or sound introduced alongside the finger into the ureter. This method I have practised for the sake of estimating its value. It is too circumstantial to be of any general applicability, and, owing to the varying sizes of index fingers, one of considerable danger;



in addition to which is the fact that in the very cases it is most desirable to catheterize, the ureteral orifices are often most difficult or even impossible to find. The method of Prof. Karl Pawlik, of Prag, of catheterizing the ureters free-handed, without preliminary preparation of the patient, beyond the occasional distention of the bladder with a bland fluid, is the one deserving most attention. This method I have both practised and seen at the hands of Prof. Pawlik during the past summer. The patient is placed in the dorsal position, with legs strongly flexed on the abdomen, and a Simon or Sims's speculum introduced retracting the posterior vaginal wall. The eye at once observes a series of divergent folds starting just back of the neck of the bladder and sweeping laterally and back toward the cervix uteri, corresponding very closely at their point of union to the inter-ureteric ligament, and following in general outline the course of the ureters. A delicate catheter, of which the cut is here shown, loaned me by Prof. Pawlik, or one similar to that exhibited here, which I have used myself, is then carried into the bladder, distended with about four ounces of urine, and poised between thumb and index finger. The position of the end of the catheter is plainly noted by the eye observing its movements in the vagina as the point sweeps gently along the floor of the bladder. The ureteral orifice is to be sought for about an inch back of the neck of the bladder, and about a half or three-quarters of an inch from the median line on either side. This position of the ureter, however, is not constant, and cannot be relied upon alone. Far more characteristic is the slight tripping sensation given to the point of the catheter as it glides over the ureteral prominence. As soon as this sensation is perceived, the catheter must be at once brought back to the place where it was felt, and gentle attempts made to engage its point by repeatedly carrying the handle upward and outward, and the point consequently in the opposite direction. Once caught, the catheter sweeps readily in, and if lightly held directs its own course, the fingers simply following. It thus passes some distance un-

restrainedly, parallel to the pelvic wall, and the eye observes the anterior vaginal wall being lifted up in advance and to one side of the cervix, forming a distinct pocket on the side on which the ureter is catheterized. This is a point to which my attention was specially called by Prof. Pawlik.

On withdrawing the stopper in the end of the catheter, a few drops of urine run out, when the flow ceases; after a few seconds a few more drops run out and then cease, keeping up in this way an intermittent discharge entirely characteristic. The catheter cannot with safety be pushed beyond the brim of the pelvis. On withdrawing it the sudden drop of the anterior vaginal wall is very characteristic. I have found, as Pawlik states, that very slight force in the cadaver is apt to make false pockets in the mucosa of the bladder. This was especially marked in a subject upon which I experimented this summer in Prof. Virchow's laboratory. The ureters were displaced backward to an extreme degree, and, in spite of the fact that I knew exactly where they were, and the catheter would constantly glide over the orifices, it was almost impossible to introduce it. I have at other times succeeded in introducing it at the very first attempt, and yesterday morning in my office catheterized the right ureter of a patient who did not know that I was doing more than making an ordinary vaginal examination. I have made a change in Pawlik's catheter, substituting a series of holes for the long fenestrum, which caught and cut the mucous membrane of the urethra in introducing it into the bladder.

#### PALPATION OF THE URETERS.

Since a visit made to Dr. M. Sanger, of Leipzig, in 1886, when he demonstrated the possibility and the practicability of palpating the female ureters in their lower pelvic portion, it has been my routine practice to examine the ureters in all gynecological cases coming to me for treatment, and in my case-book I have a printed form, in which any deviation from the normal is noted under the heading "ureters." When

there is no disease, both ureters can usually be felt with facility, as more or less flat cords about three millimetres in diameter, movable to an extent of one or two centimetres, in the loose pelvic connective tissue. One or both hands may be used in palpating, the right hand inside most readily finding the right, and the left hand the left ureter.

**METHOD.**—The finger is passed into the vagina behind the internal orifice of the urethra, at the end of the rugose promontory on the anterior vaginal wall, and carried with some exertion up toward the brim of the pelvis, displacing the vaginal wall upward and outward until the pulp of the finger reaches the highest point it can touch, often as high as the brim, but varying according to the greater or less laxity of the tissues and their fixation by pelvic pathological processes. It is then carried downward, stroking the pelvic wall, carefully estimating the character of all structures felt rolling under it. As soon as the observer thinks he has felt a ureter, he catches the cord again with the hooked finger and pulls it down a little, and then slides the finger first toward the bladder, where the ureter is felt to lose itself at the trigonum, and then backward, where it loses itself sweeping around the cervix. I have found that in a certain number of cases the ureter can be felt most distinctly in this position just in advance of the cervix, by placing the patient on her left or right side, when the vagina balloons out and applies itself closely to that side of the pelvic wall which lies undermost; here the ureter can, by a slight effort displacing the vaginal vault upward, be hooked and brought down under the finger, felt with the utmost distinctness, and compressed.

**BIMANUAL PALPATION.**—I found after examining a certain number of cases in which it was impossible to displace the vagina sufficiently to feel the ureter against the pelvic wall, or to feel the ureter with one hand lying like a cord in the connective tissue alongside the vagina, it was still possible to outline its whole course with distinctness by a bimanual examination, when it could be picked up between the tips of two fingers,



and traced from cervix to bladder. In speaking of this to Dr. Sanger this summer, he called my attention to the fact that he had mentioned the bimanual examination, and stated that he was daily more fully appreciating its possibilities. The best position to feel for the ureters at the beginning of the bimanual examination is in the oblique diameters of the pelvis, bringing the tips of the fingers as closely as possible together, and rolling them to and fro, keeping near the pelvic wall, watching for the characteristic sensation, when the cord may be traced in either direction. In late pregnancy the ureters are especially distinct, and seem often to be enlarged. Under favorable circumstances, a thickened ureter can be felt through thin abdominal walls as it leaves the pelvis and crosses the brim.

The following brief notes are a series of cases from a general gynecological practice in which I jotted down in my case-book a statement as to the condition of one or other ureter :

S. D. Chronic gonorrhœa. Left ureter distinctly felt as a tense painful cord, exciting ardor urinæ on pressure.

M. R. Five months pregnant; ureter distinctly enlarged, felt best close to cervix.

M. G. Prolapsus uteri. Ureters felt in dorsal position; in left lateral position left ureter distinctly felt after crowding vagina high up and hooking it down on finger; obturator artery felt parallel to course of ureter.

M. W., very stout woman. Ureters felt with difficulty in the dorsal position; fibres of obturator muscle easily to be mistaken for ureter; in semiprone position, left ureter brought down and felt with ease.

M. D. Appendages removed; left ureter not felt, owing to fixation of vaginal wall on that side; right felt with ease. Illegitimate pregnancy, three months. Ureters not enlarged, felt distinctly, best bimanually, in loose connective tissue.

M. G. Severe ardor urinæ; cannot feel ureter; mistook sharp border of obturator foramen for ureter.

M. F. Cannot feel ureter with unaided vaginal hand; bimanu-

ally felt distinctly in loose connective tissue at a distance of four centimetres behind pubis, and traced around toward cervix.

M. C., three months pregnant; ureter only to be felt bimanually, not enlarged, but distinct, and cord-like.

M. McC. Ureter felt distinctly in left lateral position; not felt in dorsal position.

M. C. Ureters felt doubtfully; sharp line of fascial origin of levator ani readily taken for a ureter.

M. A. Dorsal posture, ureter felt as large as little finger, exquisitely sensitive; not so well felt in lateral posture.

E. S. Ureters distinct, firm cords from bladder to cervix; desire to urinate on pressing on them.

M. U. Gonorrhoeal cystitis. Right ureter sensitive.

M. O. Large and stout woman. Ureters felt doubtfully.

M. T. Ureters flat bands; parallel to origin of levator fibres and obturator artery.

M. P. Bright's disease. Retroflexion; ureters remarkably distinct, cord-like.

M. S. Puerperal fever. Left ureter very large and distinct.

M. R. Left ureter felt by hooking finger up and under left pubic bone; it cannot, however, be pressed against the pelvic wall; felt more distinctly bimanually with the left forefinger close to the left side of the cervix, and the right hand meeting it through the abdominal wall; the tissues glide from under the hands as they are brought forward until the ureter slips like a tense whip-cord; this lies at least one and a half centimetres from and parallel to the pelvic wall in the connective tissue.

M. A. Ureter felt distinctly as it courses high up under the upper margin of the obturator foramen, and then sweeps down toward the cervix.

M. G. Ureters distinct throughout their course; particularly distinct in fornix by cervix.

F. B. Left ureter as large as quill; very tender, and produces intense desire to urinate on pressure.

M. McF., ten months pregnant; left ureter large as goose-quill.

The ureter must be felt distinctly and its course traced, to determine with certainty its identity. It may be mistaken for the obturator artery, the obturator nerve, which is some-

times very distinctly felt, the upper margin of the obturator foramen, the line of origin of the levator ani muscle, bundles of fibres of these muscles, notwithstanding their different course, and bundles of connective tissue. While the ureters cannot be discovered in all cases, with perseverance and practice a marvellous facility will be developed for their detection. With this brief summary of the methods of examination, particularly of palpation of the ureters in the ordinary cases as they mount the gynecological table, I will close by citing four cases in which the patients had been sufferers for years from disease of the ureters, and under the most varied kinds of treatment for bladder and uterine diseases which never existed. Two had had severe operations upon the bladder for cystitis; in all, I found nothing more than an inflammatory condition of the pelvic ends of the ureters—a *ureteritis*.

CASE I. *Ureteritis*.—Mrs. W. came to me in 1886, aged twenty-eight years; has had two children, six and four years ago. First labor instrumental; second natural and easy. Recovery after last rapid, until three weeks post-partum, when she lifted a heavy wash-boiler from the stove to the floor. She felt something snap inside, and was unable to straighten herself, feeling at once an intense desire to urinate; she managed to crawl to the closet, where she remained some hours straining in a vain effort to pass water. She succeeded finally in forcing out only a few drops. Since that time, four years ago, she has never urinated easily, but has remained a confirmed invalid, suffering from a constant ardor urinæ, which it is impossible to quench, and a dribbling which keeps her person wet and odorous, rendering it impossible for her to assume the care of any duties, beyond the constant necessary attention to her person. She had been treated continuously ever since the accident for various bladder diseases. I found the bladder perfectly free from disease, and after removing a large dermoid cyst, performed Dr. Emmet's buttonhole operation, under the false impression that the trouble might be due to some traction at the neck of the bladder, teasing it. Shortly after this I discovered that the whole difficulty lay in the ureters, that both ureters

were enlarged to the thickness of my little finger and exquisitely tender. The least impression made her cry out with pain and an irresistible desire to urinate, which she did upon my examining hand. The course of the ureters was similar to that of the normal, sweeping in a well-marked curve from the base of the bladder, behind the pubis, outward to the pelvic wall, skirting this in a gentle curve downward to the cervix uteri, behind which they rose to disappear from the examining finger.

CASE II. *Ureteritis*.—Sarah McK., aged twenty-eight years, single, virgin; was regular in all her functions until nine years ago, while in Ireland, at work on a hand-loom, when she began to have a desire to go more frequently to urinate. For a year this continued, growing worse, until the desire became almost constant. This continued eight years without pain, during which time she had taken work as a waitress. She then began having pains down the bladder, which she described as "jagging." She was obliged at this time to rise three or four times in the night, at well as to go almost incessantly throughout the day. From this beginning the pain has always continued, increasing in severity, until it has finally assumed a darting, stabbing character, seeming to travel from the vagina upward. Besides these pains she had at intervals throughout the day distressing bearing-down feelings in the lower part of the abdomen. For five years she has never been a half hour on her feet without urinating; her greatest distress is in the left ovarian region; the only relief experienced is for three or four minutes after passing water; latterly she cannot sleep more than half an hour without being called by a painful desire to micturate. She is pale and worn, with an anxious expression, and describes herself as utterly wretched. I found the urine clear, at times cloudy, but no evidence whatever of disease of the bladder; the left ureter was felt at a point three-quarters of an inch below the sharp upper margin of the pubic origin of the adductor, as she lay on her back, as a large, hard cord, so sensitive that she cried out on the least pressure; this grew larger and irregular in size as it swept around toward the cervix to lose itself behind the retroposed uterus. In this position, beside the cervix, the ureter was so large and tender, and so distinct to palpation, that it was mistaken at first for an enlarged tender ovary. I opened the base

of the bladder a year ago, securing perfect relief; and she so much fears a return of the old symptoms that she prefers the discomforts of the fistule, and will not yet let me close it.

CASE III. *Ureteritis*.—Mrs. C. is a mother of four children, the youngest six months old; her husband had gonorrhœa before marriage, but states he was well when married. When three months pregnant with her second child she had a violent cystitis, passing blood and pus from the bladder. A doctor dilated the urethra by introducing the finger, and since that time, in addition to her constant suffering, she has been unable to control her urine, which runs from her, soaking the bed to which she is confined. I find now no signs of any disease of the bladder, but on either side a ureter as large as a goose-quill, hard, and so tender to the touch that they cannot be thoroughly examined without an anæsthetic; the uterus is retroposed.

CASE IV.—Mrs. H., a widow, aged forty years, came to me in 1886 with a statement that she had been for eleven years a sufferer from inflammation of the bladder. During the day she urinated every fifteen minutes to every half hour, and at night arose every hour. She had a haggard expression, and a transparent, waxy skin. She suffered constantly from a burning sensation in the lower abdomen, which was frequently aggravated by the great ease with which she took cold; she was always worse at the menstrual period. She had chills, which were followed by pains all through the lower part of the abdomen, after which the urine would, at times, stop flowing for several hours, and she felt as if the “channel from the kidney to the bladder was closed.” At this time she would be consumed with a high fever, and a burning extending into the left hip bone; she suffered at the same time from palpitation and dyspnœa. Gradually under pressure of severe straining she would be able to pass a little urine by gushes and dribblets, when the attack would wear off. I found the urine with a sediment, containing no pus and no albumen. The uterus lay retroposed, as in the other cases; resting in the sacral hollow, as if sitting in a rocking chair. The cervix lay one inch behind the pubis, and halfway between cervix and pubis on the left is the large, exquisitely tender ureter, moderately movable as it lies in the loose connective tissue of

the pelvis. Urine flows in gushes during the examination, as the desire on touching the ureters is so great she cannot control it.

I performed the operation of hysterorrhaphy upon this patient, hoping that by taking the twist out of the tissue surrounding the cervix and by lifting the uterus up, a possible mechanical cause of the ureteral obstruction would be removed. Her condition after four months is marked improvement in the number of times she is obliged to urinate, especially at night, and considerable general improvement, but no change in the condition of the ureters as determined by vaginal touch.

I have purposely refrained from attempting more in these cases than to point out the fact that many cases being treated for functional disease, irritable bladder, or even cystitis, are purely and simply diseased ureters, which can readily be detected by vaginal touch.









